

REMARKS

Introduction

In response to the Office Action dated May 12, 2008, Applicants have amended claims 3 and 6. Support for amended claim 3 is found in, for example, originally filed claim 6 and Fig. 14 and pg. 16, line 4 – pg. 17, line 7 of the originally filed specification. Claim 6 has been amended editorially. Care has been taken to avoid the introduction of new matter. Claims 1 and 2 are withdrawn. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims 3-6 are in condition for allowance.

Claim Rejection Under 35 U.S.C. § 112

Claim 3 is rejected under 35 U.S.C. § 112, second paragraph, as purportedly lacking antecedent basis for “the central axis” in line 12.

The Applicant respectfully submits that the rejection is moot in view that line 6 of claim 3 recites “a central axis,” which provides explicit antecedent support for this limitation.

Claim Rejections Under 35 U.S.C. § 103

Claims 3-6 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 6,258,480 to Moriwaki in view of U.S. Patent No. 4,534,1999 to Takaishi as evidenced by U.S. Patent No. 3,577,753 to Shah.

An aspect of amended claim 1 includes displacing the outer circumferential surface of the large thickness portion by arranging the cylindrical body having the large thickness portion and the small thickness portion formed in the step of modifying a thickness, between a die having a cylindrical opening and a cylindrical punch inserted in the cylindrical body. Another aspect of

amended claim 1 includes that the diameter of the punch is set to such a value that the punch comes in contact with the inner circumferential surface of the worked large thickness portion but not in contact with the inner circumferential surface of the worked small thickness portion.

The Examiner contends that Moriwaki teaches press forming such that a distance between an outer circumferential surface of the large thickness portion and the central axis is equal to a distance between an outer circumferential surface of the small thickness portion and the central axis. The Office Action relies on Shah to provide evidence that the drawing and ironing processes involves inserting a punch into a die to form the cup, as taught by Moriwaki.

Turning to the prior art, Moriwaki describes a metal case cup having an external diameter of 21.5 mm whereas the DI metal case has an external diameter of 13.8 mm.

Shah discusses the conventional technique of drawing and ironing a metal container and its drawbacks including shearing and fracturing the metal. The teachings of Shah would not apply to Moriwaki because Shah is related to drawing and ironing containers from blanks having a dry film lubricant coating. Thus, Shah does not cure the admitted deficiencies of Moriwaki.

The Office Action admits that Moriwaki is silent to displacing the outer circumferential surface of the large thickness portion by subjecting the sidewall to press working. The Office Action relies on Takaishi in an attempt to cure the admitted deficiencies of Moriwaki and Shah. The Examiner contends that Takaishi teaches taking a stepped tube and moving the thickness regions that form the steps from the outside of the tube to the inside of the tube or from the inside of the tube to the outside of the tube. The Examiner concludes that this method produces stepped tubes with high accuracy in shape and physical properties in a simplified manner. The Examiner opines that it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the method of making a casing taught by Moriwaki with the rib

flipping method taught by Takaishi to produce a casing with a smooth outer circumference by a highly accurate shape forming means and in a simplified manner.

Takaishi shows, in Fig. 1a, a mother tube 1 having a stepped wall portion 2 with a larger thickness on the outer periphery and a straight portion 4 where a distance between an inner circumferential surface of the large thickness portion and the central axis is equal to a distance between an inner circumferential surface of the straight portion and the central axis. Takaishi discusses modifying the large thickness by a sinking operation using a hexagonal die to reverse the position of the stepped wall from the outer periphery to the inner periphery. Figs. 6a – 6f show a plug 21 that is fixed at the fore end of a plug rod 22, which passes through the die cavity of a split die 15. The plug of Takaishi contacts the inner circumferential surface of the worked large thickness portion *and* the inner circumferential surface of the worked small thickness portion. Specifically, Fig. 6d shows the hexagonal die *contacting both of the portions of the inner circumferential surface* (large and small). Thus, the diameter of the hexagonal die of Takaishi comes in contact with the inner circumferential surface of the worked large thickness portion *and* the worked small thickness portion. Takaishi fails to disclose or suggest, "...a diameter of the punch is set to such a value that the punch comes in contact with the inner circumferential surface of the worked large thickness portion but *not* in contact with the inner circumferential surface of the worked small thickness portion," as recited in amended claim 3. Thus, Takaishi fails to cure the deficiencies of Moriwaki and Shah.

According to the claimed subject matter per amended claim 3, the diameter of the punch is set to such a value that the punch comes in contact with the inner circumferential surface of the worked large thickness portion but not in contact with the inner circumferential surface of the worked small thickness portion. Thereby, as taught in the instant specification, it is not

necessary to subject the sidewall small thickness portion to press working using a die or a punch in a subsequent step after forming a large thickness portion having a thickness larger than that of sidewall small thickness portion and the punch can be removed from the cylindrical body without deforming the cylindrical body (*see, e.g.*, pg. 14, lines 1 – 31 of the originally filed specification). However, none of the cited references disclose or suggest this, and apparently are unaware of the unexpected improvement in reducing the number of steps to form the small and large thickness portions made possible by the claimed method.

As Moriwaki, Shah, and Takaishi do not disclose the same method of manufacturing an anode can for a battery as disclosed by the present inventor, and even if combined still fail to disclose or suggest the elements recited by amended claim 3, the combination of Moriwaki, Shah, and Takaishi does not render the method as recited by amended claim 3 obvious.

Claims 3-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moriwaki in view of Pre-Grant Publication No. 2002/0043089 to Reiche et al. (“Reiche”) as evidenced by Shah.

The Office Action admits that Moriwaki is silent to displacing the outer circumferential surface of the large thickness portion by subjecting the sidewall to press working. The Office Action relies on Reiche in an attempt to cure the admitted deficiencies of Moriwaki and Shah. The Examiner contends that Reiche teaches forming a tube with a thicker region and a thinner region and that the thicker region is on the outer diameter of the tube. The Office Action asserts that the tube is then run through the mandrel again and the thicker portion that is on the outside is pressed to the inside of the tube and thus, forms a tube with a smooth outer diameter and an inner diameter having a thicker portion that points inward. The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to

modify the method of Moriwaki with the method of inverting the thicker portion of a pipe taught by Reiche to create a smooth outside diameter.

In Reiche, the diameter of the drawing die contacts the inner circumferential surface of the small thickness and large thickness portions. Reiche states in Para. [0021]:

As a result of the drawing operation, the blank 1 undergoes a stretching, as shown in FIG. 4, and is transformed into a pipe 2, with *a portion of the pipe wall pressed into the recessed section 7 of the mandrel 6 to form a thicker wall portion 4*, whereas neighboring wall regions 5 have been stretched to a wall thickness size which corresponds to the distance between the mandrel area adjacent the recessed section 7 and the inside diameter of the drawing die 8 (*emphasis added*).

Reiche fails to disclose or suggest, at a minimum, "...the diameter of the punch is set to such a value that the punch comes in contact with the inner circumferential surface of the worked large thickness portion but *not* in contact with the inner circumferential surface of the worked small thickness portion," as recited in amended claim 3. Thus, Reiche fails to cure the deficiencies of Moriwaki and Shah.

As obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Reiche to modify the pipe of Moriwaki as evidenced by Shah to invert the thicker portion, to displace the outer circumferential surface of the large thickness portion, or to modify the diameter of the punch such that the punch comes in contact with the inner circumferential surface of the worked large thickness portion but not in contact with the inner circumferential surface of the worked small thickness, nor does common sense dictate the Examiner-asserted

modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Reiche. *See KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of displacing the outer circumferential surface of the large thickness portion and the claimed diameter of the punch is found in the Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As Moriwaki, Shah, and Reiche do not disclose the same method of manufacturing an anode can for a battery as disclosed by the present inventor, and even if combined still fail to disclose or suggest the elements recited by amended claim 3, the combination of Moriwaki, Shah, and Reiche does not render the method as recited by amended claim 3 obvious.

Withdrawal of the foregoing rejections is respectfully requested.

Conclusion

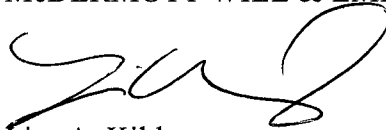
In view of the above amendments and remarks, the Applicant submits that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

Application No.: 10/765,933

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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